DISCLAIMER

Before visiting any of the sites described in the New England Intercollegiate Geological Conference guidebooks, you must obtain permission from the current landowners.

Landowners only granted permission to visit these sites to the organizers of the original trips for the designated dates of the conference. It is your responsibility to obtain permission for your visit. Be aware that this permission may not be granted.

Especially when using older guidebooks in this collection, note that locations may have changed drastically. Likewise, geological interpretations may differ from current understandings.

Please respect any trip stops designated as “no hammers”, “no collecting” or the like.

Consider possible hazards and use appropriate caution and safety equipment.

NEIGC and the hosts of these online guidebooks are not responsible for the use or misuse of the guidebooks.

The 24th Annual New England Intercollegiate Geological Excursion.

Dates - Friday and Saturday, October 12 and 13, 1928.

Locality - Vicinity of Boston, Massachusetts.

Map - Bring "Boston and Vicinity" topographic map with you.

Program

Friday: leave Geological Museum, Oxford Street, Cambridge, Mass. at 9:00 a.m., driving directly to the plant of the Boston Sand and Gravel Company at Scituate. Take state highway route 3 southeast from Boston (Jamaica Plain), through Weymouth Square to Assinippi, at end of concrete road; turn left on state highway #123, to Greenbush station; turn right on "The Driftway" into property of Gravel Company. 10:30-12:30, examine glacial and post-glacial features of the region, including ice-front delta, temporary lake deposits, esker, drumlins, etc., under leadership of Mr. Donald Reynolds, Geologist of Boston Sand and Gravel Company; 12:30, picnic lunch in club house of Sand and Gravel Company.

Members coming from south should drive directly to the Scituate plant at Greenbush station, meeting the party there at 10:30 if possible, or at 12:30 for lunch.

2:30 p.m., leave for Squantum; route 123 to Assinippi; route 3 to Wollaston; new beach boulevard to Squantum. 3:00 p.m., assemble at entrance to small park at Squantum Head. Study of Paleozoic tillite and associated deposits under leadership of Mr. R. W. Sayles; of geological structure, under leadership of Dr. Kirk Bryan and Dr. Marland Billings. 5:30 p.m., return to Cambridge.

7:30 p.m., supper at The Commander, Cambridge.

8:30 p.m., conference in Geological Museum, Harvard University, with informal review of the features seen during the day and an outline of the features to be seen on Saturday. Conference leaders, Dr. Kirk Bryan, Dr. Marland Billings, Mr. R. W. Sayles.

Saturday: leave Geological Museum in motor busses at 8:30 a.m. for all day trip in Neponset area; see accompanying schedule, which should be brought for use during the day. Return to Cambridge at 5:00 p.m.

Transportation

Transportation on Friday will be in ordinary passenger automobiles. It is expected that members of the conference will provide a sufficient number of private cars to transport the entire party, but additional vehicles will be provided if necessary. On

Saturday the localities to be visited are for the most part within the city limits of Boston and it is impracticable to use a large number of automobiles driven by persons not familiar with the city streets. It is therefore planned to assemble the entire party in two or three large motor busses, the expense of which will be approximately $1.50 per passenger.

Maps

All the localities to be visited Friday afternoon and Saturday are found on the "Boston and Vicinity" topographic map of the U.S. Geological Survey (equals Boston and Boston Bay sheets). Copies of this map may be purchased at the Harvard Cooperative Society in Cambridge. For the localities to be visited Friday morning the Abbington and Duxbury sheets are also necessary. Geologic sketch map and structure sections will be given to each member of the party Saturday morning, but the topographic map is necessary for an adequate understanding of the region.

Hotels and Meals

The Commander, a new hotel facing Cambridge Common, three blocks from the Harvard Geological Museum, will be Conference Headquarters. Rooms with twin-beds and bath will be provided at a special rate of $3.00 per person.

Picnic lunch Friday noon will be provided at a cost of 35 cents. Supper Friday evening will cost $1.00. For luncheon Saturday, arrangements will be made either for a picnic lunch or for accommodations at restaurants in the vicinity.

Necessary Information

All who intend to join this excursion must notify K.F. Mather at Harvard University not later than October 10th giving full information with respect to their intentions concerning time and place of joining the party, stating whether they will bring a car and if possible how many they can accommodate in it for the Friday trip. Hotel reservations will be made for those requesting such accommodation.

NEW ENGLAND INTERCOLLEGIATE EXCURSION October 12 and 13, 1928.

SECTION ON STRUCTURAL GEOLOGY Lead by Kirk Bryan and Marland Billings

CROSS-SECTION A. SQUANTUM (See map and cross sections).

1. Squantum Head

   (a) To the northwest across Dorchester Bay is Sayin Hill, underlain by Roxbury conglomerate dipping 28° S.
   (b) The bay is underlain by the Cambridge Argillite (Information from tunnel).
   (c) Squantum Head is composed of Squantum Tillite, which dips 35°S and is all right-side up. Apparently it rests on top of the Cambridge formation, upon which it is overthrust. This is the easterly continuation of the Mt. Hope thrust, which will be observed in two other localities on Saturday.
   (d) The tillite is overlain by the varved slates, a local basal phase of the Cambridge formation.

2. Squantum Southeast.

   (e) South of the Cambridge slates of ld the tillite is again exposed. Within this limited locality a number of interpretations seem possible, but considering the rock distribution to the west only one interpretation is acceptable, viz.: the tillite at Squantum southeast is thrust over the slates to the north.
   (f) The varved slates at the base of the Cambridge formation overlie the Squantum tillite.

CROSS-SECTION B. (Jamaica Plain, Roslindale, West Roxbury, Hyde Park).

3. Rowe Brothers Quarry, Jamaica Plain.

   (a) Quarry in Roxbury Conglomerate on south limb of central anticline.
   (b) Squantum tillite.

4. Walworth Street, Roslindale. Cambridge argillite in the Franklin Field faulted syncline.

5. Temple Street, West Roxbury.

   (a) Upper beds of the Cambridge argillite, cross-bedded and ripple-marked with the top to the south.
   (b) About 200 feet to the south of the argillite the Dedham granodiorite (part of the basement complex) is exposed. The Mt. Hope overthrust intervenes between the Cambridge argillite and the Dedham granodiorite; formations stratigraphically 5000 feet apart have thus been brought into contact.
   (c) To the south the crystalline core of the Dorchester faulted anticline extends for one and a half miles. The Sally Rock thrust plane shown on the map and section has not actually been traced this far west as yet; it would bring granodiorite against granodiorite and hence be very difficult to recognize.

6. Regent Road, Hyde Park. From this point a complete traverse across the Roxbury conglomerate on the south limb of the Dorchester anticline is possible.

   (a) Mattapan volcanics.
   (b) Conglomerate of the Roxbury formation.
   (c) Sandstone and slate interbedded with the Roxbury formation.
   (d) Conglomerate of the Roxbury formation; dip 63° S: top to south.
   (e) Squantum tillite at Business Street. (Comment on this outcrop by R.W. Sayles).

(f) Mattapan volcanics. The Neponset overthrust intervenes between Squantum tillite and Mattapan volcanics. The shear planes of the great north-south tear fault may also be seen here.

7. Hyde Park. From an outcrop of the basal beds of the Roxbury Conglomerate only Mattapan volcanics can be seen on looking north-eastward along the strike. The same horizon of the Roxbury occurs three-quarters of a mile to the south where it has been displaced by the Stony Brook tear-fault.

CROSS-SECTION C. Jamaica Plain, Dorchester, Milton, Blue Hills.

8. St. Catherine Street, Forest Hills. Squantum tillite on the south limb of the central anticline. West of the railroad this same horizon of tillite is off-set three-quarters of a mile to the north (see map) by displacement along the Stony Brook tear-fault.

9. Mt. Hope Cemetery.

(a) Exposures of Cambridge argillite in the Franklin Field faulted syncline.
(b) Mattapan volcanics are exposed immediately south of the Cambridge argillite. These formations are stratigraphically at least 2500 feet apart; hence a large fault, the Mt. Hope thrust, must intervene; the same fault as at localities 1 and 5b.
(c) Roxbury conglomerate overlying the Mattapan volcanics.

10. Calvary Cemetery.

(d) Roxbury conglomerate (Continuation of 9c). Channeling and fracture cleavage demonstrate that the top of the strata is to the south.
(e) Green shales interbedded with the Roxbury conglomerate.
(f) Mattapan volcanics of the Dorchester faulted anticline. Two interpretations of the structure from 9b to 10f are possible. (1) The Roxbury conglomerate may be caught in a syncline flanked on either side by Mattapan volcanics. (2) If the top of the Roxbury conglomerate is everywhere to the south, then the Mattapan volcanics of 10f must be thrust over the Roxbury conglomerate. The second interpretation is accepted, for it is in accord with the structural relations found to the east and west, and with the field data that are available here. This is the Sally Rock thrust, seen at Squantum Southeast.

11. River Street, Hyde Park (near Mattapan). Base of the Roxbury conglomerate overlying the Mattapan volcanics on south limb of the Dorchester anticline.

12. Babson Street, Mattapan. Angular unconformity between the tuffs of the Mattapan volcanics and the base of the Roxbury conglomerate.

13. Milton Upper Mills. A north to south traverse across the southern limb of the Dorchester anticline.

(a) Roxbury conglomerate; ripples indicate top to the south.
(b) Squantum tillite.
(c) Mattapan volcanics directly to the south of the tillite. Inasmuch as these volcanics are adjacent to the Squantum tillite, which is stratigraphically several thousand feet above the Mattapan volcanics, a fault of large proportions must intervene. This is the Neponset thrust, which dies out a mile to the east.

14. Randolph Avenue.

(a) Milton quartzite. Previous workers have assigned this formation to the Roxbury conglomerate, but Bryan and Billings consider this to be an early Paleozoic quartzite.

(b) Quincy granite. Loughlin saw the contact between the Milton quartzite and the Quincy granite during road construction. He states that it is a thrust fault dipping 70° S. Evidence will be offered in the field for believing that the Quincy granite has been thrust northward many miles to its present position.

STRATIGRAPHY OF THE BOSTON BASIN

Tufts quartzite (Carboniferous)	Green, yellow and red Quartzite	40 feet
Cambridge argillite (Carboniferous)	Gray massive argillite and slate, with some sandstone; red varved slates developed locally at base	3500 feet
Squantum tillite (Carboniferous)	Tillite and interbedded fluvio-glacial conglomerate	50-600 feet
Roxbury conglomerate (Carboniferous)	Conglomerate of coarse texture and polygenous origin; interbedded sandstone, slate, melaphyr, and quartzite.	1000-3000 feet
	Slight angular unconformity	
Mattapan volcanics (Carboniferous)	Felsite, melaphyr, tuff, breccia, and minor amounts of conglomerate.	0-2000 feet
	Major unconformity	
Basement complex	Quincy batholith (Devonian) Milton quartzite (Early Paleozoic) Braintree and Weymouth formations (Cambrian) Dedham-Salem batholith (Pre-Cambrian) Grafton quartzite (Pre-Cambrian) Marlboro formation (Pre-Cambrian)	